

case produce two kinds of sperm-cells. one possessing the other lacking this special character. A germ-cell of the female, fertilized by a sperm-cell of the first kind would develop into a male. fertilized by a sperm-cell of the second kind, would develop into a female. If sperm-cells of both kinds were produced in approximately equal numbers, a germ-cell would have an even chance of being fertilized by either one or the other ; and an explanation is forthcoming for the fact that, on an average, males and females are born in about equal numbers. It may be conjectured that sexual generation, by imparting a shock to the life substance, maintains its essential instability and prevents it from settling down into such a state of equilibrium as would come about from undisturbed habit. However this may be, one point is clear—that sexual generation modifies individuality, and contributes very potently to the changefulness of Life.

We pass, now, to the consideration of still greater changes—transformations so wonderful that until comparatively recent times their action was hardly suspected. Individuals may change and die : but, so far as we can judge by ordinary observation, there is no alteration in the type of the species to which they belong. But, unless we reject the doctrine of evolution, we must believe that the type is subject to like changes with the

individual, and that, just as individual plants and animals reach maturity through a number of embryonic stages of advancing complexity, so have all the species now existing worked their way up from the bottom of the animal and vegetable kingdoms by passing through metamorphoses, each of which at one time, in bygone ages, stood for a